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AMERICAN DYESTUFF REPORTER

Vol. IV, No. 18

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IN THIS ISSUE

So This Is Bolshevism! Part I

Jokes About the Bolsheviki Are Passé; the Time Has Come for American Manufacturers to Understand Clearly What They Are and What They Do. We Have Endeavored to Give This Information Painlessly—and Quickly—in the Above and Its Succeeding Article.

The Indigoid Vat Colors

By G. A. Haley

ESTABLISHED 1872

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fects of which can be limited only by a widespread campaign of education in which the REPORTER feels it entirely consistent to take part. The relation of Bolshevik propaganda to the dye industry is considered on another page of this issue.

The average man to-day would be unable to give a clear definition of Bolshevism or to tell you very much about it save that it is now being tried out in Russia, where a rather disagreeable time is being had by all. This is scarcely enough information to warrant anyone's having definite opinions for or against it, or to permit of its activities being recognized. As a matter of fact, Bolshevism, once merely a bark, has now become a bark with a bite. Its tenets are among the very worst, being opposed to most of the age-old practices which go to make up common decency; it is gaining adherents, and misery and want invariably follow in its wake.

We shall endeavor to impart, as painlessly as possible, what it stands for. Charles E. Hughes, as president of the Union League Club of New York, recently appointed a committee headed by Archibald E. Stevenson to investigate the subject, which would take hours of reading to probe successfully, and it is to the two reports issued by this committee that we are largely indebted for the facts set forth.

ELEMENTS OF BOLSHEVISM

There are two well-recognized groups of periodical disturbers of the public peace. They are the Anarchists and the Socialists. There is a third, not so well known but fully as important, called the Syndicalists. This name is unfamiliar, but when it is stated that the I. W. W. is one of the leading exponents of Syndicalism its status at once takes definite shape.

The Anarchists, of whom Leon Czolgosz, slayer of President McKinley, was one, are stated by their principal leader in this country, Emma Goldman, to be working for the establishment of "a new social order based on liberty unrestricted by man-made laws; the theory that all forms of government rest on violence and are therefore wrong and harmful, as well as unnecessary." Through the Ferrer Association they have organized a school at Stelton, N. J., where criticism of the laws of the United States is part of the curriculum. In theory they refuse to participate in political activity because they believe all government is a bar to true progress. In practice they opposed the operation of the draft law and circulated propaganda of all descriptions against the participation of this country in the war. As a result of this many of them found themselves in jail,

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but the propaganda continued throughout the war. They believe in the abolition of capital and the State, and favor internationalism and the solidarity of the working people.

The Syndicalists, likewise, believe that all central authority must be abolished and that government must be carried on by agreements between various groups of workmen. In case difficult projects are undertaken, experts in finance, engineering and technology are to be hired by these groups. Their general principles are not unlike those of the Anarchists, except that where the Anarchists are individualists the Syndicalists are more clannish and would set up committees to determine policies and settle disputes. Hence, this form of government has been termed "Group Anarchism." The Industrial Workers of the World describe their aims thus in a pamphlet printed in the report referred to above: "As a revolutionary organization, the Industrial Workers of the World aims to use all tactics that will get the result sought with the least expenditure of time and energy. . . . The question of 'right' and 'wrong' does not concern us. No terms made with an employer are final. . . . Interference by the Government is resented by open violation of the Government's orders. . . . In short, the I. W. W. advocates the use of 'militant direct action' tactics to the full extent of our power to make good." The so-called Socialist Labor Party is actively identified with the Syndicalists. Like the Anarchists, the organizations classified under this heading believe in internationalism and the solidarity of the working people.

The third group referred to, the Socialists, are divided into two schools. The former—the Socialism of John Spargo and his associates—was comparatively harmless, as it advocated compromising with other governments. This was called Evolutionary Socialism. The extremists of the party, known as Revolutionary Socialists,

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however, took control at the beginning of the war and have been running things with a high hand ever since. One of the most pleasing of their beliefs is that national patriotism is a false doctrine. They also published pamphlets in which it was declared that the workers of this country had no quarrel with the workers of Germany. As in the case of the other two groups, they would have no France, no England, no United States, but "just one big family" of workers dwelling together in perfect accord, and consequently they, too, are committed to the idea of international working-class solidarity.

Because of their extreme views, all members of the three groups described above have, from time to time, been more or less loosely referred to as Radicals, and, since the red flag was often used as their symbol, they have likewise been termed the "Reds."

For the first time in their history the war united all three groups of Radicals. In Russia, their activities financed by German coin, they became so strong as to overthrow the government by which Kerensky was in vain trying to create order and a solid front against the Germans. Those in Russia who advocated the least amount of change of existing conditions consistent with better government came to be known as the Minimalists, or Mensheviki, while the adherents of the three radical groups, the "Reds," who advocated superlative measures, came to be called the Maximalists, or Bolsheviki.

Bolshevism, then, is a combination of the followers of Anarchism, Syndicalism and Revolutionary Socialism. They combined on the common plank in their respective platforms which advocates internationalism and the solidarity of the working people.

[The foregoing is the first of a series of two articles on Bolshevism and is intended to answer the question "What is it?" The second, which will be printed next week under the heading "Bolshevism: A Bark with a Bite," will endeavor to answer the question "What does it do?"—Ed.]

The Miller & Moran Chemical Works, 154 Nassau Street, New York, are considering plans for the reconstruction of their chemical works on Meadow Street, near the Lincoln Highway, Newark, N. J., destroyed by fire recently.

The Perth Amboy Chemical Works, Buckingham Street, Perth Amboy, N. J., have filed plans for the construction of a one-story addition to their works for increased capacity.

The Hendey Chemical Company of Manhattan has been incorporated with a capital of $10,000. The incorporators are A. E. and S. N. Hendey and C. W. Griffiths, 251 West Seventy-fifth Street.

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THOSE AWFUL BOLSHEVIKI

The relation of Bolshevism—a brief exposition of which forms the leading article this week—to the American dye industry is an indirect and, in some respects, largely potential one. Nevertheless, there *is* a relation, and likely to be a more apparent one; hence the subject is spoken of at this time rather than later, when the chances for detecting its activities will be better but the chances for restraining those activities will be worse.

Thus far, according to some prominent dye manufacturers, no manifestations of Bolshevik interference with industry in the form of professional agitators have been observed in any of the plants. Present conditions render such interference unlikely just now, for the reason that stocks are being disposed of so slowly that the dye makers have been obliged to cut down their working forces and are not operating to capacity. This means that the malcontents, the malingerers and the inefficient, always the first to go, are not working in the dye plants, and, as it is among gentry of this stripe that the most active breeders of discontent are usually found, the industry is at present free from distracting influences, being made up of the saner and more steady elements of the business.

But the present inactivity is due to trouble in the textile mills, where labor difficulties and strikes have followed fast and frequently upon the heels of peace. Indeed, labor conditions in the textile industry are probably as bad as, if not worse than, any in the country. Dye makers sell more than 70 per cent of their output to the textile industry, and are consequently affected quickly by the numerous shutdowns and consequent losses of business which have occurred.

Just how much of the labor troubles in the textile mills have been directly due to Bolshevik agitators masked as Socialists, I. W. W.'s, or what not, would be difficult to say, for they employ extremely underhanded and furtive methods in spreading their poison. But certain it is that they have been responsible for a large share of the unrest, and should be most carefully watched for. Some of them came from Europe by way of South America, working their passage as crews on coasting steamships. On obtaining shore leave at our ports they promptly disappeared, thereby entering the country without passing the scrutiny of the immigration officials. They are an unhealthy lot, coming forth at night to spread their insidious propaganda and false doctrines. They pose as the "friends of the working man"; but they are no true friends to anyone, least of all to prosperity.

To our way of thinking, it would be absurd to credit them with being a menace to the United States Government, much as they would like to be, but they *are* a menace to "good times" and the full dinner pail if ever there was one. It is this which should be impressed upon those in the mills who would listen to the obscene "personal liberty" which they advocate, and in this connection the campaign of education which seems likely to grow out of the recent investigations of the Union League Club of New York should be aided in every possible way by manufacturers and foremen. Once the American workman rightly understands what the Bolshevist stands for, he will have none of him;—"nature will do the rest!"

Once it was German propaganda; now it is Bolshevism which must be taken in hand. With the return of capacity operation of dye plants, that industry will again become a fertile field for the cultivation of unrest, and it is the new hands who must be watched.

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And, by God, he won the War!

—Edmund Vance Cooke, in Buffalo Times.

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THE INDIGOID VAT COLORS

By G. A. Haley

Part I

In the realm of dyestuff application one of the most significant features of the decade which terminated in 1914 was the demand for fastness, a demand which was fostered by the rapidly increasing range of fast dyes. Pre-eminent amongst these were the vat colors. Although partially eclipsed during the last two or three years owing to the exigencies of war, the vat colors are destined to play an increasingly important part in the adornment of textile fabrics, and a brief review of certain of these coloring matters is perhaps opportune at the present moment of transition from war to peace conditions.

The dyer and color chemist have agreed to designate as vat dyestuffs those coloring matters which, whilst insoluble in water, give on reduction leuco compounds soluble in alkalies. On immersing textile fabrics in these solutions the leuco compounds are absorbed, and in contact with the air undergo re-oxidation to the original dyestuff. A similar behavior is shown by many sulphur colors, but by common consent these are not regarded as true vat colors. From the dyeing point of view there is actually no sharp line of demarcation between the two classes, since not only may many sulphur colors be dyed by the vat method, but vat colors are also known which dissolve in, and can be dyed from, a sodium sulphide solution. Generally speaking, the vat colors are much superior in fastness properties to the sulphur colors.

No achievements of the coal-tar industry has been more remarkable and more creditable than that of the discovery and development of the vat colors. They represent at once the newest and best of the groups of coal-tar colors. There are older groups which surpass them in brightness of shade, and there are individual members of other groups equalling them in fastness, but as a

class they out-distance all competitors in their combined advantages of variety and beauty of shade, fastness properties, and ease and diversity of application.

The Three Classes

Chemically the vat colors fall into three well-defined classes. The first of these, the indigoid group, owe their name to their chemical relationship to indigo. The second group, the anthraquinone vat colors, are derived from anthraquinone, and in recent years vat colors of a third group have appeared, which are produced by methods resembling those used in the manufacture of sulphur dyes and are referred to as sulphurized vat dyestuffs. This last class is best known through its first member, Hydron Blue.

It is satisfactory to know that the production of vat colors is no longer a Continental monopoly. Members of all three groups are being manufactured and sold in this country under the following names:

Caledon colors, Anthraquinone class (Indanthrene type).
Chloranthrene colors, Anthraquinone class (Indanthrene type).
Duranthrene colors, Anthraquinone class (Indanthrene type).
Hydranthrene colors, Anthraquinone class (Indanthrene type).
Durindone colors, Indigoid class (Ciba, Helindone, Thioindigo type).
Carbindole Blue, Sulphurized class (Hydron Blue type).

Possessing in common the property already referred to of reducing to leuco compounds soluble in alkalies, the three groups of vat colors, as might be expected from their widely varying chemical constitution, display considerable difference in behavior towards various textile fibres. In practice each group has its own fairly well-defined sphere of usefulness, and it is the scope of this article to consider the indigoid series.

History

The history of the indigoid vat colors may be said to date from the year 1866, when Professor Baeyer commenced the celebrated researches which led to the analysis and eventually to the synthesis of indigo. Although indigo possesses a history and an individuality so marked that it has never become merged in the group of vat dyes to which it has given the generic name, it is not merely a member, but actually the parent, of the indigoid vat colors, and no reference to this family of colors would be complete without mention of their illustrious founder. Continuing the simile, it is also of interest to note that the father of the family as yet displays no symptoms of senile decay,

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but seems rather to have discovered the secret of perennial youth. Further, although some of his offspring have inherited all, or more than all, his good looks, none shows promise of equalling the old man in all-around efficiency, usefulness and popularity.

The theory and practice of indigo dyeing are so well known as to require no elaborate description, and reference to indigo application will be confined to comparatively recent developments.

Of these innovations one of the most important is that of the application of the solid hydrosulphites to the reduction of indigo and of other vat dyes. Sodium hydrosulphite made by reacting on sodium bisulphite with zinc, had been in limited use for indigo dyeing since the year 1871, but a great stimulus to the use of the hydrosulphite vat was given when sodium hydrosulphite in the form of a comparatively stable powder was placed on the market in the year 1904 or 1905. By the use of solid hydrosulphite the preparation of the indigo stock vat becomes a matter of extreme simplicity and reliability, and it moreover becomes possible to prepare an indigo vat free from sediment, the many advantages of which are obvious. The dyeing of indigo was further simplified by the introduction under the name of Indigo Solution or Indigo Vat of indigo in reduced and dissolved form. The use of such preparations in conjunction with hydrosulphite powder has made considerable headway prior to the war, and this method of dyeing undoubtedly represents the theoretically ideal method of applying indigo.

Wool Dyeing

In wool dyeing the introduction of prepared reduced indigos led to rapid adoption of the ammonia vat, and with the appearance on the market of Levinstein's Indigo LL Vat I 20 per cent, this method of dyeing is again being taken up. Indigo LL Vat I consists of a solution of reduced indigo containing no free caustic alkali, and with the aid of this preparation it is possible to dye wool under ideal conditions—viz., in a vat perfectly free from sediment as also from lime, caustic soda and other dangerous alkalies. Since indigo white is insoluble in ammonia there would appear to be a danger of precipitation of indigo white in the vat, but this difficulty was overcome by the observation that if glue is added to the vat any precipitated indigo white assumes a colloidal form which is quite suitable for dyeing. Although employed principally in the ammonia vat Indigo LL Vat I may also be used in the bisulphite vat, and on occasions is employed in replenishing wood vats.

The hydrosulphite vat for cotton is used to some extent in the continuous dyeing of pieces and warps, but particularly for cop dyeing in circulating machines where a dye liquor perfectly free from sediment is essential. The indigo may be reduced with hydrosulphite and caustic soda, but it is found more convenient to employ the reduced

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indigo solutions prepared by the synthetic indigo manufacturer. Indigo LL in reduced and dissolved form for cotton dyeing is now on the market under the name of Indigo LL Vat II 20 per cent.

For various reasons the hydrosulphite vat has found little application in the dyeing of indigo on cotton yarns. This material is almost invariably dyed by dipping single hanks in a succession of vats and wringing out by hand between each dip. It has been found, however, that by attaching to the dye-beck a pair of squeezing rollers through which the yarn may be passed immediately on removing from the vat, cotton yarn can be dyed in lots of 50 to 60 pounds instead of in 2-pound hanks. Moreover, by reducing the amount of caustic alkali and adding Glauber's salt to the vat, considerably deeper shades are obtained in one dip that was hitherto possible. This method of dyeing not only effects an economy in labor, but gives shades of maximum fastness to rubbing and washing.

It may be mentioned here that in addition to the reduced indigo preparations already referred to, which are solutions of the sodium salt of indigo white, the makers of synthetic indigo have also placed on the market brands in paste and dry form consisting of free undissolved indigo white. These possess the advantage of keeping almost indefinitely, due to the fact that free indigo white is only very slowly oxidized by the air, and they are readily soluble in lime-water, caustic soda, or even in the vat liquors. They have proved particularly suitable for export to tropical countries, but are of little or no importance to the home consumer.

Hydrosulphite Discharges

Another modern innovation in connection with indigo is that of the application of hydrosulphite to discharge printing. The older method of discharging with oxidizing agents, such as bichrome or chlorates, was accompanied by serious danger of tendering the fibre, and it was evident that discharging with reducing agents, if practicable, would be very advantageous. Hydrosulphite itself is too unstable a body to allow of its use for this purpose, but the problem was at once simplified by the discovery, at a print-works in Moscow, of the stabilizing action of formaldehyde on hydrosulphites. The reaction of these two substances gives a product known chemically as formaldehyde sodium sulphoxylate, introduced into commerce originally as Rongalite C, and now manufactured in England as Formosul. This body, which only decomposes and exercises its reducing action at high temperatures, seemed ideal-

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ly suited for discharging indigo. It was thought that by printing with Rongalite solutions and steaming the indigo would be reduced and the leuco indigo could be removed from the fibre by passing through alkalies. The results obtained were, however, disappointing, as it was found in practice that poor whites were obtained owing to re-oxidation of the leuco indigo before stripping could be effected. This difficulty was eventually overcome and the process rendered technically possible by the interesting discovery of the Leucotropes. It was found that certain complicated ammonium bases, in which a benzyl group was present, combined with indigo white giving yellow benzyl compounds which were not oxidized on exposure to air. If, therefore, indigo-dyed material was printed with a mixture of Rongalite and one of these bodies and steamed, the indigo white which was formed was converted into the stable yellow benzyl compound.

This benzyl compound was not, however, soluble in alkalies, and could only be used for yellow discharge effects. It was later found that a sulphonic acid of the original Leucotrope gave with reduced indigo a yellow benzyl compound of leuco indigo which, whilst equally resistent to oxidation, could be removed from the fibre by alkalies, and the problem of discharging indigo with reducing agents was solved. In practice it has been found necessary to add zinc oxide to the discharge paste, the zinc entering into the chemical reaction which occurs.

A mixture of Leucotrope, Rongalite and zinc oxide has been sold in large quantities under the name of Rongalite CL, and the process has been extensively applied to the discharge printing, not only of indigo, but also of other colors of the indigoid class.

So well has the field of indigo application been ploughed in the last twenty-five years that we seem almost to have reached finality in its development and

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improvement, and even the most ardent opponent of synthetic indigo will admit that the conversion of indigo to the ranks of coal-tar colors has resulted in a great expansion of our knowledge of the application of this important coloring matter.

Method of Manufacture

The evolution of the indigoid vat colors from the parent substance may now be very briefly described. It had long been known that by introducing certain chemical radicles into the indigo molecule new products could be obtained which, whilst resembling indigo in general features, differed from it to a greater or less extent in shade or fastness properties. For example, the introduction of two methyl groups gives a blue of greener shade and increased fastness to chlorine, and this dyestuff was on the market under the names of Indigo T and Indigo G. The effect of introducing a naphtyl group into the indigo structure is to produce a green coloring matter, and this has also appeared in commerce. Dyestuffs of greater commercial importance resulted by acting on indigo with bromine. Depending on the conditions of bromination varying dyestuffs containing different amounts of bromine can be obtained, and several of these brom-indigos have been introduced under such names as Indigo R, 2R, 4B, 5B, and 6B, Ciba Blue and Durindone Blues. Dyestuffs similar to the brom-indigos are obtained by the use of chlorine, either alone or together with bromine, and such were put on the market under the name of Brilliant Indigos. The chlor- and brom-indigos are brighter in shade than indigo itself, and beyond a certain point an increase in the number of bromine atoms produces greener shades. At the same time the dyestuffs become weaker, and their leuco compounds less readily soluble. The new dyestuffs are also found to be somewhat faster to light, washing and chlorine than indigo, and in some cases to have acquired so increased an affinity for the cotton fibre that they dye and exhaust well from a hot dye-bath. Such, for example, is the case with the Durindone Blues.

Indigo on oxidation gives a substance called isatin, from which several indigoid colors—*e. g.*, Alizarine Indigos and certain Helindone Blues, are obtained. If isatin, an oxidation product of indigo, is combined with indoxyl, one of the reduction products of indigo, a substance named indirubine is obtained, the same indirubine or red impurity which is found to a greater or less extent in all natural indigos. Now indirubine as a dyestuff is worthless, but like indigo it can be brominated, giving rise to useful violet vat colors. The effect of bromine in converting otherwise worthless products into useful dyestuffs is an interesting feature of this group of colors.—*Dyer and Calico Printer.*

(PART II WILL FOLLOW)

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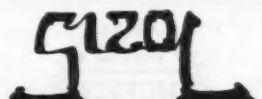
200 Fifth Avenue New York

We urge that the Textile Industry support the stand of the American Dyestuff Reporter for an American Dyestuff Industry.



SIZINGS—FINISHINGS—SOFTENERS
SEYDEL MFG. CO.
Jersey City, N. J.

NOTES OF THE TRADE

The Fabric Cleaning & Dyeing Company has been incorporated, under the laws of New York, at Queens, L. I., with a capital of $1,000,000. The incorporators consist of C. S. Julien, E. J. A. Williams and C. S. Woodman, 20 Nassau Street, New York City.

Aniline Dyes & Chemicals, Inc., announce that, in order to better serve their customers in the West, they have opened an office and warehouse at 227-233 West Huron Street, Chicago, Ill.

Stocks of dyestuffs and chemicals for the textile, paint, paper and tanning industries will be warehoused there. Fully equipped laboratories in charge of a competent chemist will be maintained for the convenience of their customers, and J. B. Jones, formerly manager of the Chicago branch of the United Indigo & Chemical Company, will be in charge.

With a capital of $250,000, the Winthrop Chemical Company has been incorporated, under the laws of New York, by C. B. Fernald, H. H. Ramsay and E. R. Early. Headquarters will be at 120 Broadway, New York City.

The Reflex Manufacturing Company has been incorporated at Parry Sound, Ont., Canada, to manufacture polishes, paints and varnishes. The capital is $40,000 and the provisional directors are David J. Fleming, Samuel A. Rankin and William D. Fleming.

The Lanfield Aniline Color Company, Chicago, Ill., has been dissolved. No plans for reorganization have as yet been announced.

The first cotton-ginning plant in Zululand, writes Vice-Consul Charles J. Pisar from Cape Town, recently commenced operations at Amatikulu, after almost a year's preparatory work. The capacity of the American gin installed is between 1,500 and 1,600 pounds of lint for an eight-hour day, which represents 2½ tons of seed cotton. The installation of this ginning plant is looked upon as one of far-reaching importance for the cotton growers in Zululand, and it is believed that cotton growing there, which has been receiving special attention from Government experts, will undergo a very rapid development in the near future.

SOUTHERN TEXTILE CONVENTION

The annual convention of the Southern Textile Association will be held at Greenville, S. C., on May 8 and 9, in connection with the third biennial textile exposition, which will open in that city May 5 and extend through the week.

The mayor of Greenville will give an address of welcome when the convention convenes at 11 a. m. on May 8. The president of the association, A. M. Dixon, will deliver his annual address and there will be appointed committees on the preparation of technical papers. On Friday morning, May 9 there will be a talk by Prof. Doggett, of Clemson College, the reading of two technical papers and the election of officers.

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Dyestuffs Colors Sizing and Finishing Materials	*Produced by*	Consolidated Color and Chemical Co. Newark, N. J.
Dyestuffs and Intermediates	*Produced by*	Central Dyestuff and Chemical Co. Newark, N. J.

BOSTON, 130 Oliver Street
PHILADELPHIA, 132 Chestnut St.
PROVIDENCE, 23 S. Main Street
ATLANTA, 1418 Empire Building
CHICAGO, 317 Clark Street
SAN FRANCISCO, 20-22 Natoma St.
CHARLOTTE, 210 South Tryon Street